

We claim:

- 1 1. A camera module apparatus, comprising:
2 a camera integrated circuit chip;
3 a lens; and
4 a molding formed on the integrated circuit chip for holding the lens such that the lens is
5 positioned thereby in relation to the integrated circuit chip.
- 1 2. The camera module apparatus of claim 1, wherein:
2 the camera integrated circuit chip is mounted on a printed circuit board.
- 1 3. The camera module apparatus of claim 1, further comprising:
2 a protective cover over the integrated circuit chip.
- 1 4. The camera module apparatus of claim 3, wherein:
2 the protective cover is a molded spacer.
- 1 5. The camera module apparatus of claim 3, wherein:
2 the protective cover is a glass sheet.
- 1 6. The camera module apparatus of claim 1, wherein:
2 the molding has a recess for receiving the lens.
- 1 7. The camera module apparatus of claim 1, wherein:
2 the lens is held in place on the molding by an adhesive.
- 1 8. The camera module apparatus of claim 1, wherein:
2 the molding has a recess for positioning the lens relative to the integrated circuit chip.

- 1 9. An integrated camera circuit and lens module, comprising:
2 a camera integrated circuit; and
3 a lens assembly; and wherein
4 the lens assembly is affixed to the integrated circuit.
- 1 10. The integrated camera circuit and lens module of claim 9, wherein:
2 the lens assembly is rigidly affixed to the integrated circuit such that there is a gap between
3 at least a portion of the lens assembly and a sensor array of the integrated circuit.
- 1 11. The integrated camera circuit and lens module of claim 9, wherein:
2 the lens assembly is attached to the integrated circuit by a molded component.
- 1 12. The integrated camera circuit and lens module of claim 11, wherein:
2 the lens assembly is attached to the molding by an adhesive.
- 1 13. The integrated camera circuit and lens module of claim 9, wherein:
2 the integrated circuit is mounted on a circuit board.
- 1 14. The integrated camera circuit and lens module of claim 9, further comprising:
2 a protective cover over the integrated circuit chip.
- 1 15. The integrated camera circuit and lens module of claim 14, wherein:
2 the protective cover is a molded spacer.
- 1 16. The integrated camera circuit and lens module of claim 14, wherein:
2 the protective cover is a glass sheet.
- 1 17. A method for producing a camera module, comprising:
2 molding a receptacle over an integrated circuit;
3 inserting a lens assembly into the receptacle; and
4 securing the lens assembly into the receptacle.

- 1 18. The method of claim 17, wherein:
2 the lens assembly is secured to the receptacle by an adhesive.
- 1 19. The method of claim 17, wherein:
2 the integrated circuit is secured to a circuit board before the receptacle is molded over the
3 integrated circuit.
- 1 20. The method of claim 17, wherein:
2 the receptacle includes a recessed portion for receiving the lens assembly.
- 1 21. The method of claim 20, wherein:
2 the recess portion includes a projection for fixing the distance of the lens assembly from
3 the integrated circuit.
- 1 22. The method of claim 17, wherein:
2 the camera module is affixed to a flex circuit.
- 1 23. The method of claim 17, further comprising:
2 placing a protective cover over the integrated circuit.
- 1 24. The method of claim 23, wherein:
2 the step of placing the protective cover over the integrated circuit occurs during the step of
3 molding a receptacle over the integrated circuit.
- 1 25. The method of claim 23, wherein:
2 the protective cover is a molded spacer.
- 1 26. The method of claim 23, wherein:
2 the protective cover is a glass plate.

- 1 27. An camera apparatus, comprising:
2 an integrated circuit camera apparatus having thereon a photosensitive array; and
3 a lens assembly for focusing light on the photosensitive array; wherein
4 the lens assembly is rigidly affixed on the integrated circuit camera apparatus.
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- 1 28. The camera apparatus of claim 27, wherein:
2 the lens assembly has a housing for receiving at least one lens.
- 1 29. The camera apparatus of claim 27, wherein:
2 the lens assembly has a housing for receiving two lenses.
- 1 30. The camera apparatus of claim 27, wherein:
2 the integrated circuit camera apparatus is affixed to a circuit board.
- 1 31. The camera apparatus of claim 27, wherein:
2 the integrated circuit camera apparatus is affixed to a circuit board; and
3 a lens assembly receiving apparatus is affixed to the circuit board.
- 1 32. The camera apparatus of claim 31, wherein:
2 the lens assembly receiving apparatus is a molded receptacle.
- 1 33. The camera apparatus of claim 31, wherein:
2 the lens assembly is rigidly affixed within the lens assembly receiving apparatus.
- 1 34. The camera apparatus of claim 31, wherein;
2 the lens assembly is affixed within the lens assembly receiving apparatus by an adhesive.
- 1 35. The camera apparatus of claim 27, further comprising:
2 a protective cover fixed between the integrated circuit camera apparatus and the lens
3 assembly.

1 36. The camera apparatus of claim 35, wherein:
2 the protective cover is a molded spacer.

1 37. The camera apparatus of claim 35, wherein:
2 the protective cover is a glass plate.

1 38. The camera apparatus of claim 35, wherein:
2 the protective cover is held in place by an overmold formed over the integrated circuit
3 camera apparatus.

1 39. A camera module apparatus, comprising:
2 a camera integrated circuit chip;
3 a lens; and
4 means for holding the lens such that the lens is positioned thereby in relation to the
5 integrated circuit chip.